

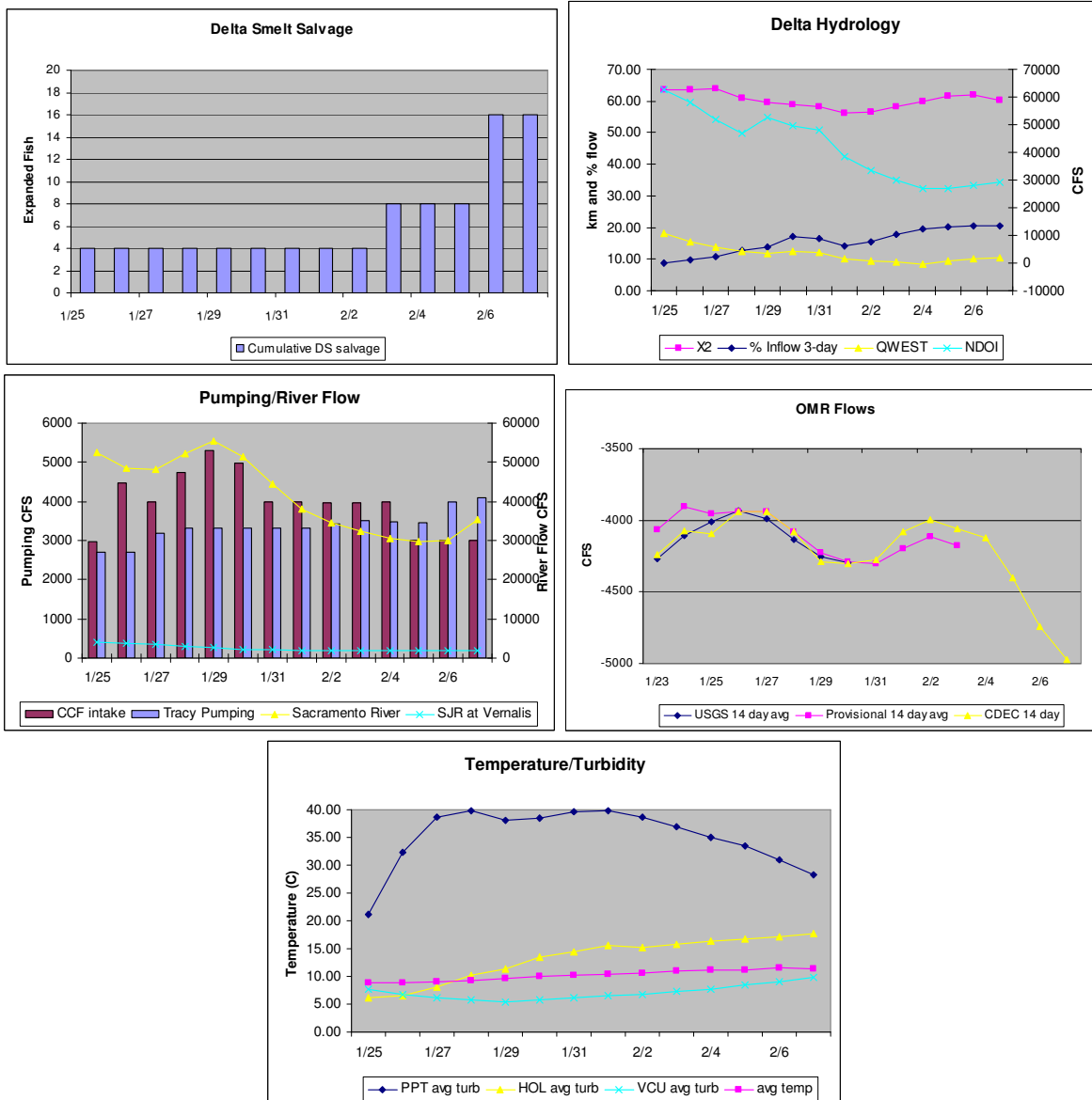
SMELT WORKING GROUP
Monday, February 8, 2010

Recommendation for the week of February 8, 2010:

Considering the recent salvage of delta smelt at the CVP on February 3, 6, and 8, current hydrological conditions, and the planned operations of the projects (approximately 11,200 cfs combined exports), the SWG believes that the risk of entrainment for delta smelt is high. The SWG therefore recommends that OMR be set at no more negative than -2000cfs on a 14-day average (no more negative than -2500cfs on a 5-day average), as allowed under Action 2. The Working Group will continue to monitor salvage, survey data, and hydrological conditions and reconvene February 16 to discuss the potential to modify the recommendation.

1) Current environmental data.

- **Temperature** for the 3 station average is 11.4 C.
- **Turbidity** is 28.25 NTU for Prisoner's Point, 17.78 NTU for Holland Tract, and 9.76 for Victoria Canal.
- **OMR** The provisional estimate by the projects as of February 3 is -4180 cfs for 14 day average, -5220 cfs for 5 day average. USGS OMR as of January 30 is -4292 cfs 14 day average and -5084 cfs for 5 day average. OMR estimate from CDEC as of February 7 is -4974 cfs 14 day average, -5622 cfs 5 day average.
- **Flow** Sacramento River inflow is about 25,000 cfs and San Joaquin just under 2,000 cfs. The Projects must increase SJR flow to 2280 by the end of the month, and may have to compensate to achieve the needed average. The E/I ratio is about 20%, X₂ is holding at around 60 km, QWEST is positive at about 2100 cfs and NDOI is 29,230 cfs. The Graphs below show the most recent trends in delta smelt cumulative salvage, Delta hydrology, and water quality that were evaluated by the Working Group.



2) Delta fish monitoring:

Smelt Larval Survey #3 was in the field February 1 and 2. No delta smelt larvae were detected. Longfin larvae were collected throughout the Delta and westward, with highest densities in the Sacramento River, confluence and a few stations further west. Lower densities were detected in the central and southern Delta. Spring Kodiak Trawl Survey #2 is in the field this week. Results from larval surveys and the SKT are available online at: <http://www.delta.dfg.ca.gov/delta>.

3) Salvage

Four delta smelt (expanded) were salvaged on February 3, 8 (expanded) on February 6 and 8 (expanded) as of 8:00 am February 8. The complete count for February 8 will not be available until February 9. A total of 20 delta smelt have been salvaged (expanded) since February 3,

bringing the cumulative total for the season to 24 (expanded). The total allowable take for adults under the Biological Opinion is 123, cumulative, for the season. Thus 24 delta smelt represents approximately 20% of the total for the season.

4) Expected Project Operations

The Projects expect to increase exports to levels allowed under SWRCB Decision 1641. At 4200 cfs, the CVP is at maximum pumping but the SWP expects to increase from 2500 cfs today to 6680 cfs, plus 1/3 of San Joaquin River flow at Vernalis. Total exports are expected to be approximately 11,200 cfs.

5) Particle Tracking Modeling

PTM results based on 31-day scenarios with OMR set at -5000 cfs, -4000 cfs, -3000 cfs, and -2000 cfs were provided by DWR and evaluated by the Working Group. The Group noted that the results of PTM are more applicable to longfin smelt larvae than for the adult delta smelt currently in the Delta. There is no evidence that delta smelt have begun spawning, so the Working Group did not consider the PTM results in the context of delta smelt larval entrainment risk.

6) Discussion for Recommendation

The Working Group reviewed and discussed all relevant data from fish surveys, Delta monitoring, salvage, planned Project operations and particle tracking modeling.

The Working Group believes that the first flush has already occurred in the Delta (See notes for February 4). Action 2 of the biological opinion, which is intended to protect adult delta smelt after the first flush, includes a range of OMR values from -1250 cfs to -5000 cfs. The BO also provides guidance to assist in the discussion of where to set the OMR value within this range for any given week. The BO (pp 353-354) specifies that if entrainment risk is low, OMR values could be expected to remain as negative as -5000 cfs, but if entrainment risk is high would be set so as to reduce that risk. The risk factors are (1) evidence of migration, (2) fish occurring in the south or central Delta and (3) evidence of entrainment. Because there is evidence of migration and salvage has occurred, it is appropriate to consider the high-entrainment risk scenario.

It is the intention of the B.O. to avoid salvage of delta smelt and to minimize salvage when it cannot be avoided. The Group would like to avoid cuing more delta smelt to enter the south Delta (reducing future entrainment events) and to minimize entrainment occurring now to the greatest extent practicable. Past field sampling and salvage evidence indicates that delta smelt are actively migrating, which makes them vulnerable to entrainment. The Working Group expects that the current salvage event will continue over the next week (because the fish observed over the next few days will have already been pulled into Old and/or Middle Rivers). The Group's recommendation to change OMR to no more negative than -2000 cfs is expected to minimize and potentially avoid future salvage events by avoiding conditions that cue delta smelt in the mainstem of the San Joaquin River to move further south toward the pumps. The Group

views this as a preventative action to keep salvage under the incidental take limit and to reduce the likelihood that additional actions will be needed to protect spawners. Based on the PTM runs, the group expects that at -2000 cfs OMR the Projects' "footprint" will not strongly influence the mainstem San Joaquin River. The Group was reminded that in recent years the highest density of adult delta smelt salvage typically occurs over a short period of time (usually over a week or two) prior to March, and that CVP salvage typically precedes SWP salvage. Given these recent historical trends in adult salvage (and the salvage over the past several days), the Working Group felt that a strong protective action was appropriate this week, to minimize the risks described above.

The Working Group discussed the possibility that at -2000 cfs OMR, some net flow would be moving out of the Old and Middle Rivers further north and west, and that this could assist delta smelt that are just moving into the central Delta to remain in the mainstem San Joaquin River.

The Working Group discussed recommending OMR flows as negative as -5000 cfs. The Working Group observed that salvage had been very low while OMR flows were no more negative than -5000 cfs. Referring to the PTM and considering that adult delta smelt do not behave as particles, the Group noted little difference between -3000 and -4000 cfs OMR; however, there was considerable difference in particle entrainment between -3000 and -5000 cfs OMR. The Group agreed that operating to an OMR flow as negative as -5000 cfs would likely result in a continued high risk of entraining migrating delta smelt. At this more negative end of the OMR flow range, the Group expects that the incidental take limit could be reached prior to the end of the season, and potentially much sooner. The Group could not determine whether there would be a difference in losses to the population with OMR flows at -4000 cfs compared to -5000 cfs. SWG members differed in their opinion on how protective an OMR value of -3000 cfs would be for the species, potentially providing better protection than -4000 cfs OMR at most stations but less protection than -2000 cfs OMR. The PTM results indicate that -2000 cfs OMR limits particle entrainment to Old and Middle Rivers. Members agreed that -2000 cfs provided the best protection for the species at an important time in the species' life history; however, depending upon overall distribution of delta smelt, -3000 or -4000 cfs could be sufficiently protective. Some members suggested that a trigger for salvage should be set, along with an initially more negative OMR flow. The Group decided that they preferred to be proactive, and minimize salvage from this point forward by recommending that OMR be set at the more positive value of -2000 cfs.

After some questioning from the members, operators clarified that once a restriction was placed on OMR flow, they strive to meet the 14-day and 5-day limits each day. For example, if the new limit were placed at -2000 cfs OMR, the operators would strive to meet -2000 cfs OMR each day of the 14-day window, rather than operating to higher values at the start or the end of the 14 day window. Additionally, the group was reminded that when a new OMR restriction is placed on the operators, the averaging period resets (OMR values from the previous week do not carry forward). This transition language is in draft form.

Next Meeting: Tuesday, February 9, 2010 at 8:30 am